ABSTRACT

Utilizing frequency-dependent diffraction (also referred to as dispersion) to determine the angular position of a retro-reflective object within a scanning space. The technique involves dispersing an electromagnetic beam into a scanning space by frequency. If a retro-reflective object is located within the scanning space, the object will retro-reflect a portion of the dispersed beam having a frequency that is associated with the angular position of the retro-reflective object within the scanning space. The frequency of the retro-reflected beam is used to determine the angular position of the retro-reflective object within the scanning space. When a second beam is dispersed into the scanning space and a portion of the second beam is retro-reflected in the manner just described, a second angular position of the retro-reflective object can be found. Coordinates of the retro-reflective object are determinable by triangulation using the two angular positions. These are absolute, as opposed to relative, coordinates.